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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Applicant: Butterworth	)	Art Unit: 2142
Serial No.: 10/090,404	)	Examiner: Lin
Filed: March 4, 2002	)	ARC920010105US1
For: SYSTEM AND METHOD FOR DETERMINING WEAK MEMBERSHIP IN SET OF COMPUTER NODES	)	March 31, 2006 750 B STREET, Suite 3120 San Diego, CA 92101

SUPPLEMENTAL APPEAL BRIEF

Commissioner of Patents and Trademarks

Dear Sir:

This brief reinstates the appeal in response to the attempt to reopen prosecution dated March 24, 2006.

Table of Contents

(1) Real Party in Interest

The real party in interest is IBM Corp.

(2) Related Appeals/Interferences

No other appeals or interferences exist which relate to the present application or appeal.

(3) Status of Claims

Claims 1-32 are pending and more than twice rejected.

(4) Status of Amendments

No amendments are outstanding.

(5) Summary of the Claimed Subject Matter

As an initial matter, it is noted that according to the Patent Office, the concise explanations under this section are for Board convenience, and do not supersede what the claims actually state, 69 Fed. Reg. 155 (August 2004), see page 49976. Accordingly, nothing in this Section should be construed as an estoppel that limits the actual claim language.

Claim 1 sets forth a computer system (page 3, line 13) that has (page 3, id.) at least two nodes (12, figure 1, page 6, first paragraph of Detailed Description; page 3, line 13; page 6, line 15), with each node (page 6, line 15; page 3, lines 13-14) including logic (page 3, lines 13-18) that includes (page 3, line 14) determining (page 3, line 14) a system topography (page 10, line 8), and determining an optimum membership (page 10, line 9) based (page 10, line 10) on the topography. The determining act at each node converges (page 14, line 8) with the determining act on all other nodes with each node (page 3, line 18)

arriving at (page 5, line 4) the same (page 6, line 15) optimum (page 3, line 19) membership (e.g., page 4, line 1) as the other nodes (id.) but independently (page 6, line 15) of the other nodes (supra and id.).

Claim 10 is cast n terms of a computer program device that includes a computer program storage device readable by a processor (such as a node 12) and a program on the program storage device that includes instructions executable by the processor for determining an optimum membership in a set of nodes in a system. Means (e.g., element 26) are provided for receiving state changes in the system, e.g., at block 36 of figure 5 and page 11 at the top of the page, and means (id.) determine the optimum membership based at least in part on the state changes, e.g., block 38. To this end a random number seed (page 11, line 8) may be used that is made available to at least two nodes in the system with each node arriving at the same optimum membership as the other nodes but independently of optimum memberships developed by the other nodes, supra.

Claim 18 recites a method for providing at least first and second nodes (12, id.) in a system of nodes with a membership that is identical for each first and second node without requiring the membership to be communicated between the nodes. The method includes providing each node with a random seed, with the random seed being the same at the first node as it is at the second node, block 38, id. Also, the method includes, at the first and second nodes, using the random seed to arrive at a membership in the system of nodes with each node arriving at the same membership as the other nodes but independently of the memberships arrived at by the other nodes, id.

Claim 25 sets forth a method for establishing, at at least first and second nodes (12, id.) in a system of nodes, an optimization (page 5, line 2) that is identical (page 11, line 14) for each first and second node without requiring the optimization to be communicated between the nodes (page 11, line 14). The method

includes executing the optimization at the first node and the second node such that each node must arrive at the same optimization as the other node and independently thereof, supra.

(6) Grounds of Rejection to be Reviewed on Appeal

(a) Claim 1 has been rejected under 35 U.S.C. §102 as being anticipated by Le Boudec et al., USPN 6,016,306.

(b) Claims 2-32 have been rejected under 35 U.S.C. §103 as being unpatentable over Le Boudec et al. in view of Trovato, USPP 2003/0069981.

(7) Argument

(a) The error in the present rejection (which has been approved by an SPE and has been brought to the attention of the Technology Center Director) is so clear and easy to see that Appellant will keep things short. Claim 1 requires determining an ***optimum membership*** based on a topography (as opposed to determining the topography itself, please note), and more: the membership determination must be undertaken at each of at least two nodes, and the membership determinations at the nodes must converge with each other, with each node arriving at the same optimum membership as the other nodes but independently of the other nodes.

The only portion of Le Boudec et al. that has been cited for teaching the above (using shorthand) multi-node independent membership convergence is col. 4, line 57 continuing to col. 5, line 6.

The relied-upon teaching in the reference is simple, clear, and to the present rejections fatally sparse. In a "widest path metric" for determining a path between nodes, the "weight" of the path is assigned the

greatest weight of any one of its components links. As taught by the relied-upon section of the reference, the "widest path" method can complement a "shortest path" method. That's it. Nothing about determining a membership, just determining a network path, much less still is there any teaching that an undisclosed membership determination is undertaken independently by plural nodes in a way that each node's membership determination converges with the determinations at the other nodes.

At this point the rejection descends into near-incomprehensibility as it strives to say something about the missing teachings (essentially, the heart of Claim 1.) As near as Appellant can tell, it appears to be the examiner's position that because a "minmax" function is "applied to all node in the link to determine the bottleneck-type link" (sic), then this is somehow a "converging function because the result of function minmax is a finite set of solution, moreover, the result for each node in the link will arrive at the same optimum membership" (sic).

As is now manifest, whatever syllogism is being employed here is nonsense. Simply because a network path is assigned the weight of its heaviest link in no way teaches determining an optimum membership at two or more nodes in a way that these determinations are independent and converging. The rejections merit reversal.

While it is not Appellant's job to do the examiner's work for him, Appellant would like to point out the following teachings in the primary reference to better develop the record, since it appears that neither the examiner nor the SPE bothered to read beyond the first few lines of column 5. It appears from figures 1A and 1B and col. 5, lines 25 *et seq.* that Le Boudec et al. envisions that each node includes a topology function 10 that accesses a bandwidth update module 11 and a widest path generator 12. Upon connection requests 13, the widest path is assigned to route the connection, and importantly, ***link state information must be***

exchanged between the nodes to keep the topology function up to date, col. 5, lines 31-33. This teaching is nothing if not the very opposite of the "independence" requirement of Claim 1.

As important, nothing anywhere in the reference appears to teach, to the best of Appellant's knowledge, determining optimum membership as opposed to optimum topology links. It follows that the reference cannot teach any particulars about determining membership, and certainly not the particulars that are recited in Claim 1. If the examiner has decided to read "membership" so broadly as to encompass something seemingly so different, he should explain what, precisely, are the findings of fact and the underpinning evidence of record on which he is relying to conclude that the skilled artisan would broadly read "membership" to encompass "link" (see MPEP §2111.01, claims may be construed during prosecution only as broadly as the skilled artisan would construe them.) As it stands, the record is devoid of any findings of fact on the part of the PTO in regard to the scope of the term "membership", much less does it contain any evidence of record that might support the unstated findings of fact.

(b) Plainly, since the primary reference fails to teach what the obviousness rejections allege it teaches, they fail. Again for the sake of completeness, however, Appellant will offer the following analysis of the attempted *prima facie* case. Trovato has been used as a teaching of a random seed. Indeed, Trovato teaches that a server and client can be given the same random seed - but for the totally unrelated area of encryption, not for anything remotely resembling network topology or membership determinations. Nowhere does any relied-upon part of Trovato ever address network topology concerns, much less that its principles might be applied to the unmentioned field. Nowhere has it been alleged that the primary reference contemplates random seeds. Thus, the proferred "motivation" to combine the two reference is, not surprisingly, mildly

amusing. Per the examiner, and as agreed to by the SPE, the skilled artisan would have been motivated to combine Trovato's dual-seed encryption method with the primary reference "to search for the next node of the link (path). Because Le Boudec's routing information can be modified to add same seed value (sic) for next node search processing such as IP address that will save substantially (sic) time and resource because of the encoding of a seed value (Trovato, page 3, [0026])."

In other words, the examiner and SPE discern, in Trovato's teaching in paragraph 26 that encoding a small seed facilitates the use of stronger data encryption, a suggestion to add "same seed value" in some inexplicable way to the completely different subject matter of Le Boudec et al. for "next node search processing." If the Board can find the logic in this, Appellant would like to know it.

Turning to Claim 3, it is alleged that Le Boudec teaches simulated annealing at col. 8, lines 40-54 because "the line of codes (sic) present the processing of annealing technique, iteratively check to determine the result is optimized (sic)." Appellant cannot acquiesce in this allegation unless evidence is adduced of record that the relied-upon code in fact teaches "optimizing" (the word is never mentioned in the relied-upon code) and that those of skill in the art regard the process shown in the code to be a "simulated annealing technique." Certainly, the relationship between the relied-upon code in Le Boudec and Appellant's explanation of simulated annealing starting in the last paragraph of page 11 of the present specification is opaque.

Turning to the rejection of Claim 4, the examiner and SPE point to Le Boudec et al., col. 2, lines 40-46 and col. 5, lines 7-11 as a teaching of a module that optimizes membership. These sections of Le Boudec et al. discuss links, not membership, which is why the examiner and his SPE studiously avoid identifying what element specifically is being relied on for membership determination. Without limitation,

the rejections of Claims 8 and 9 suffer from similar defects (mistaking apples in Le Boudec et al. as being oranges in the present claims.)

Respectfully submitted,

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1053-131.AP1

APPENDIX A - APPEALED CLAIMS

1. A computer system, comprising:

at least two nodes, each node including logic for undertaking method acts comprising:

determining a system topography;

determining an optimum membership based on the topography, the determining act at each node converging with the determining act on all other nodes with each node arriving at the same optimum membership as the other nodes but independently of the other nodes.

2. The system of Claim 1, comprising more than two nodes, the determining act being based on a seed, the seed being the same for each node such that each node uses the same seed as every other node in determining the optimum membership, such that the optimum membership arrived at by each node is the same membership arrived at by every other node.

3. The system of Claim 1, wherein the act of determining an optimum membership is undertaken using a randomized simulated annealing technique.

4. The system of Claim 1, wherein each node includes a link state module undertaking the act of determining a topology and an optimization module undertaking the act of determining an optimum membership, the link state module sending the topology to the optimization module.

5. The system of Claim 4, wherein the link state module at each node communicates with at least one link state module at another node in the system.

6. The system of Claim 4, wherein the link state module communicates with a database of links and nodes.

7. The system of Claim 6, wherein elements in the database is periodically refreshed.

8. The system of Claim 4, wherein each node includes an event manager receiving the optimum membership from the optimization module, the optimum membership being used by the event manager during system operations.

9. The system of Claim 4, wherein the method acts undertaken by the optimization module further include:

iteratively determining plural solutions;

determining which solution is a most desirable solution;

returning the most desirable solution if it is fully connected; otherwise

returning a next most desirable solution if the next most desirable solution is fully connected.

10. A computer program device comprising:

a computer program storage device readable by a processor; and

a program on the program storage device and including instructions executable by the processor for determining an optimum membership in a set of nodes in a system, the program comprising:

means for receiving state changes in the system; and

means for determining the optimum membership based at least in part on the state changes, using a random number seed that is made available to at least two nodes in the system with each node arriving at the same optimum membership as the other nodes but independently of optimum memberships developed by the other nodes.

11. The computer program device of Claim 10, further comprising:

means for determining a system topography based on the state changes.

12. The computer program device of Claim 11, wherein the means for determining an optimum membership uses a randomized simulated annealing technique.

13. The computer program device of Claim 11, wherein the means for receiving state changes receives messages from at least one remote node in the system.

14. The computer program device of Claim 10, wherein the means for receiving communicates with a database of links and nodes.

15. The computer program device of Claim 14, comprising means for refreshing elements in the database.

16. The computer program device of Claim 10, further comprising means for receiving the optimum membership from the means for determining for use thereof during system operations.

17. The computer program device of Claim 10, wherein the means for determining includes:

means for iteratively determining plural solutions;

means for determining which solution is a most desirable solution;

means for returning the most desirable solution if it is fully connected, and otherwise returning a next most desirable solution if the next most desirable solution is fully connected.

18. A method for providing at least first and second nodes in a system of nodes with a membership that is identical for each first and second node without requiring the membership to be communicated between the nodes, comprising the acts of:

providing each node with a random seed, the random seed being the same at the first node as it is at the second node; and

at the first and second nodes, using the random seed to arrive at a membership in the system of nodes with each node arriving at the same membership as the other nodes but independently of the memberships arrived at by the other nodes.

19. The method of Claim 18, wherein the system includes more than two nodes, all nodes in the system being provided with the random seed, the act of using the random seed being undertaken at each node.

20. The method of Claim 18, further comprising:

determining a system topography; and

determining the membership based on the topography.

21. The method of Claim 20, wherein the act of determining a membership is undertaken using a randomized simulated annealing technique.

22. The method of Claim 18, further comprising, at at least plural nodes, communicating state changes to other nodes in the system.

23. The method of Claim 18, comprising using the membership during system operations.

24. The method of Claim 18, further comprising:

iteratively determining plural solutions to a weak membership problem;

determining which solution is a most desirable solution;

returning the most desirable solution if it is fully connected; otherwise

returning a next most desirable solution if the next most desirable solution is fully connected.

25. A method for establishing, at at least first and second nodes in a system of nodes, an optimization that is identical for each first and second node without requiring the optimization to be communicated between the nodes, comprising the acts of:

executing the optimization at the first node and the second node such that each node must arrive at the same optimization as the other node and independently thereof.

26. The method of Claim 25, comprising:

providing each node with a random seed, the random seed being the same at the first node as it is at the second node; and

at the first and second nodes, using the random seed to arrive at the optimization.

27. The method of Claim 26, wherein the system includes more than two nodes, all nodes in the system being provided with the random seed, the act of using the random seed being undertaken at each node.

28. The method of Claim 26, further comprising:

determining a system topography; and

determining the optimization based on the topography.

29. The method of Claim 28, wherein the act of determining an optimization is undertaken using a randomized simulated annealing technique.

30. The method of Claim 26, further comprising, at at least plural nodes, communicating state changes to other nodes in the system.

31. The method of Claim 26, comprising using the optimization during system operations.

32. The method of Claim 26, further comprising:

iteratively determining plural solutions to a problem;

determining which solution is a most desirable solution;

returning the most desirable solution if it is fully connected; otherwise

returning a next most desirable solution if the next most desirable solution is fully connected.

APPENDIX B - EVIDENCE

None (this sheet made necessary by 69 Fed. Reg. 155 (August 2004), page 49978.)

APPENDIX C - RELATED PROCEEDINGS

None (this sheet made necessary by 69 Fed. Reg. 155 (August 2004), page 49978.)